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**Effectiveness of Literature Study in
Discriminative Interaction with Projected Societies**

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Abstract

The present paper is intended to give an account of the reactions of 19 years old students of a Swedish Gymnasium to some 20th century ideas and their social implementation. The students were exposed to three potential developments of future societies and thereafter an extended course on modern literature took place. All participating students, in all 90 subjects, were re-tested on the same three videotape societies. The purpose with his test-retest design was to study the possible impact of literature dimensions that correspond with the scientific paradigms of (1) affinity, (2) structure, and (3) process, which are built into the video-projections in the form of situations. The dimensions chosen and discussed with the subjects were (1) surrealism/behaviourism, (2) expressionism/structuralism, and (3) futurism/functionalism. These concepts were made concrete by studies of works of European and US authors and poets as prototypical representatives. The study took place within the ordinary lectures during spring term 1997. The time schedule for the course contained 15 hours of lecturing. It ended with a test in which the subjects were asked to read a set of texts constructed as situations giving a cue to a modernistic concept. As answers they had to indicate the name of a prototypical author. The scientific question to be studied is whether or not literature study of modern ideas is contributing to one's comprehension of modern society. There is an indication that the conception of the model societies is non-changing and that the conception of one's native society becomes more profiled. However, differences have been noted with respect to the surface and depth dimensions of a society. Moreover, individual differences seem to depend on one's educational profile.

A primary goal for the study of modern literature at the gymnasium level (comparable to senior high school/secondary school or first year college) is to acquire knowledge of ideas related to culture and society. The interesting point to be studied is in what respect the ideas of our century as they are conserved in arts and literature have properties characteristic of the ideas that can be identified as basic in society as a whole.

It is commonly accepted in the scientific community that there exist two basic models according to which organic systems develop and which therefore are naturally used for the development and design of civilisations. One builds on (1) affinity (dependency between individual and environment), the other on (2) structure. A third model has been developed, which builds on information and control and is a (3) process model. The three fundamental ideas of affinity, structure, and process may be expressed by other similar concepts depending on the purpose for which they are to be used. The first one, for example, is the one used within the S-R theory in behavioural science, that is, behaviourism. The second is sometimes called the theory of Gestalts or fields, which means that it is a model of development and maturity. The third one is a communication model, which is technological rather than science oriented.

Used as model of a civilisation the first could be the model of the totalitarian society, the one which Huxley, Orwell and others warned us of, and which Skinner brought to a head

in "Beyond Freedom and Dignity". The ideas of structuralism are to be found in an ecological society, based on wholeness and fated, cyclic development. Consequently, a central concept within Gestalt theory is "common fate". The model is represented in the works of Kafka, who writes about the fields of power that the human being is inexorably exposed to. It exemplifies European structuralism as it relates to Kurt Levin's concept of power vectors defining a life space. The ideas behind the process model have been implemented in terms of growth, that is a linearly progressive development, which requires recurrent regulations in order not to break down. The process model has very much in common with behaviourist concepts but also with functionalism, as for example the way Margaret Atwood concentrates on the magnification of the reproduction function in her novel "The Handmaid's Tale".

The aim of this experiment was to study

(1) whether it is possible for gymnasium students to learn and comprehend modern ideas of culture and society as they are presented in literature, and

(2) if so, whether this comprehension is indicative of competence for civil life.

Method

Participants

The participants were students around 19 years of age. They numbered 117 in all and represented four classes of different study programs. The preconditions concerning the students' knowledge of literature were the same for all four classes.

Selection of Materials

An idea is an abstraction. When humans are exposed to an idea they capture it intuitively, that is react immediately and adequately in the situation, provided that the idea is of special import to them. Thus intuition is something a person has after having built up knowledge and experiences into invariants. Nature has equipped us with the ability to build up invariants, which are of immediate importance for our survival as an individual and as a species. Just think of the infant who refuses to crawl over the edge of a cliff, despite the fact that a glass top is covering it, because the eyes tell it not to. The infant can make clear neither to himself nor to others why it is not crossing the glass. He just reacts totally adequate in relation to what he sees. The experiments on the "visual cliff" in the 1950's and 1960's (Gibson & Walk, 1960) became famous, because the researchers could show that infants differ in expressing an invariant. The visual cliff elicited wonder, frustration, anger, fright, etc, various expressions showing the significance of the established invariant, which may be named by concepts such as "barrier", "separation", "height", and "danger", depending on the degree of intuitive consciousness displayed in the situation. In an educational situation it is the teacher who is supposed to help the students build up knowledge and offer possibilities to make experiences. In the case of literature study the teacher should help to identify the various properties that constitute an idea. However, it is completely impossible for a teacher to control the knowledge creating pathways of every gymnasium student in his establishing of an intellectual invariant of the actual kind. What the teacher can control is the means and materials the students had access to during the lessons.

Against this background the reasonable method for testing the establishment of an idea was judged to be the "visual cliff" method (Campos, Hiatt, Ramsey, Henderson, & Svejda, 1978). Thus it was decided that invariants should be tested in an immediate manner, in a situation that was new in relation to the instructional situation and the materials used there. The selection of texts and structuring of the subject matter has been made with the aim to test the immediate pick-up of ideas.

The textbook on the history of literature was the same in all four classes. Since not all authors can be represented in the same course, it was important to form prototypical groups of

similar "members" from where selection could be made. All the authors named were listed, who have been described with such terminology that refers to cultural "ism" and the like. The descriptions were used as column notations. Groupings appeared by a cluster analysis, which means that the author names having one or several notations in common were grouped together.

This study constituted the basis for the selection and presentation of a list of 32 author names to the students to make choices from. Thereafter a list of author names was generated which was the same for all classes. The criterion for selection of a particular name was that it had been chosen by at least two students. By this measure a kernel was specified. Thereafter some additions were made so that every class by presenting *or* going through the texts had prepared the same matter.

Not only written texts but also audio-visual materials produced in the USA were used in the course. At the University of Boulder, CO, the Biological Science Curriculum Study in collaboration with Crystal Productions of Seattle, CA, developed a material for the study of man in modern society. It consists of slides and films produced under the theme "Projections for the future" (Lee & Mayer, 1976). The projections are three, each one building on one of the three basic models mentioned. They are called "behaviour model" "humanist model" and "growth model". Each model is built up by ideas that constitute a whole, an ideology. To illustrate the society in question an episode has been recorded which contains crucial properties of that environment and prerequisites necessary for individuals to make a living. The three sequences are shortly the following.

The Behaviour model concentrates on a young man who is rescued from under-nourishment and taken to hospital: he is suffering from amnesia. A narrative is enacted about a civilisation, which by means of behaviour modification tries to socialise the young man into a collective.

The Humanist model is illustrated by a story about a young man who arrives at an ecological tree farm and who gets to know himself with the guidance of people who bring about a feeling for nature and human dignity.

The Growth model shows a young man on his way into a modern city, but essential functions in the society are out of order and this technical dysfunction becomes a symbol of the limits within interacting systems.

Procedure

The course took place in the spring of 1997. It started with the first exposure to the videos. The students judged the models including the native society, Sweden, as to their possibilities of making a living there. The time required was 60 minutes. This was followed by eleven weeks of literature study (18 hours) including reading, presentation of an author's ideas in a novel, discussing and comparing ideas in operation, from the point of view of organising a society and in literary function.

Behaviourism was judged to be very similar to surrealism (compare automatic writing, freedom from control of sense and morality, primitivism, Freudian positivism, and Joyce's narrative). Structuralism has many more aspects than what the model of development conveys but may to a high degree be compared with expressionism (compare its striving toward a conception of the wholeness of man, intensive modes of expression, gestalt formation against background, tension by passing borderlines). The process model, here also called functionalism, is an expression of design as opposed to science. As such it is close to futurism (compare machine cult, violence, devotion to technical inventions, forward movement).

The time span between end of course and test was set at about four weeks. Shortly after the test the second exposure to the videos took place followed by the same procedure as the first time.

Results

The three models may be characterised as ideas put into operation. The event that they portray follows strictly an idea, which has been shown by Elstrup Rasmussen (1997), who has analysed the dialogues of every scene. Thus through audio-visual cues a comprehension of ideas should be mediated immediately to the viewer. In the literature, however, the circumstances are different. The descriptions of isms are implicit, which implies that the reader cannot expect an unambiguous and consequent follow-up of a model. Moreover, a literary work often represents more than one ism, for example structuralism in the content and behaviourism in the technique. Literature is an expression of ideas *in function.* Consequently, a problem to be solved was to construct a test, which measures the comprehension of ideas in function. The version finally used consists of textually formulated situations, each of which contains cues to an idea or ism, although without containing explicit cues, such as words, names and events from studied texts.

Test Construction

Because the aim of the course was to study modern ideas as reflected in authorship, the recognition of an idea should give an author name as response. Based on the first cluster analysis a second was performed. This one had the task to identify those concepts that could be associated most unambiguously with the 32 author names. In this way 15 concepts were generated which formed the basis for the construction of the situations making up the test form. This test is not of the classical type, thus within limits there is no a priori right or wrong. The student must react adequately to a number of co-operating factors in the test situation and this implies a more dynamical response space. In scoring the test, alternatives were possible and were equally weighted. Testing time was set at 60 minutes, depending on the type of test. The 15 situations describe the following ideas, isms and concepts:

Expressionism, futurism, surrealism, behaviourism, Gestalt, war, time, social realism, functionalism, existentialism, idealism of the commons, psychoanalysis, magic realism, romanticism, provincialism.

The principle of the construction is illustrated by an example item preceded by the instruction.

Instruction

In this booklet you find some pieces of text. Each of them explains an idea and makes it concrete. To each text belongs a preamble, which puts the text into a situation. You are now asked to gather the idea and to associate it with the name of an author. This name will be your response. Even if you can think of more than one name as a possible response, you should select only one.

Example Item

At a seminar i Stockholm held sometime during the 1930's the Swedish masters of social engineering, the Myrdals, invited a certain Dr Watson to give some inspiration. Who could have reproduced his thoughts in literary print?

"Give me a dozen well shaped, healthy children and I guarantee that I can take each one randomly and train it to become just any specialist you like, doctor, lawyer, artist, yes even master thief, totally irrespective of the child's ability, interests, race, or ancestors."

In this example there are several cues to the behaviourism: the art of social engineering and the name Watson. In the words Watson uses it is evident that he describes instrumental conditioning and associated concepts. The linguistic cues are 'randomly', 'any /…/ you like',

and 'irrespective of /…/'. The best response to this item would be Orwell, but characteristics of behaviourism are apparent in Huxley's works as well, so this response is also correct.

Degree of Difficulty in the Concepts

Against the background that the test is aimed at measuring comprehension, and thus be competence indicative, there is a clear parallel to be drawn between the shallow and the deep side of the Visual Cliff and the concepts' surface and depth characteristics. For this reason the concepts are called deep and shallow. The shallow concepts appeal to fact- or sensation-based characteristics that can be recognised as known to the perceiver. Thus the shallow or surface side of an idea serves as basis for further exploration into the conceptual depth. The deep concepts require the surface layout as standpoint. Through the perceiver's movements in diverse directions it forms the basis for establishing invariants. Referring to the educational procedure, the 15 concepts have been assigned one of the video displayed models and also a notation on their being shallow or deep.

To generate a common basis for making transparent the underlying paradigmatic information, it is assumed that only three models are of relevance, namely the Behaviour, Structure, and Process models. In a different context, B. Bierschenk (1988) has shown that the strength of their associated cue structures differs in the situation of perceiving and judging the videos. Consequently, it may be argued that the Behaviour and Process models have more in common with each other than they both have with the Structure model (see B. Bierschenk, 1988, p 326). The reaction patterns on the visual cliff were projected against a background of behaviour science and physiological variables. The variables define the basic idea of the experiments. The three civilisation models represent in the present context a basic idea and the concepts are variables which, at least partly, define this idea. Each of the three models comprise a degree of difficulty regarding the comprehension of the relationship between the basic components. With reference to B. Bierschenk's study this scale has been used in a way that the concepts have been assigned a value which denotes whether they are shallow (value 1) or deep (value 2). They were also assigned a value that denotes to what model they belong (B = 1, P = 2, S = 3). These two values have been used for multiplication, such that the weight 1 denotes the shallowest concept, whereas the weight 6 denotes the deepest one.

A problem for the visual cliff experimenters was that they could only infer the experiential background of the infants by their behaviour. This background was supposed to have governed what attracted the child and became a value in the exposed situation. For example, it was taken for granted that infants who cried and defied the danger to get to their mother on the other side of the cliff were too bound to their mother and that this binding made them blind to the consequences of the crossing. The experiential background had retarded the development of their competence in reacting adequately in a situation, which is a matter of survival or not. In the same way the variables established in the present context will indicate whether the students have been able to react to the conceptual disparity that has been built into the test form. The questions to be studied in relation to the aim of the study could now be specified, namely
(1) whether the degree of difficulty can differentiate between the concepts, and
(2) whether the classes differ in comprehension.

An analysis of variance was carried out (I. Bierschenk, 1997) which has been calculated on the frequency, with which the concepts have been conceived, seen over all four classes. The result has shown that the four classes noteworthy do not differ in comprehending the concepts when these are grouped according to degree of difficulty. The verification that the classes are equal is in its turn dependent on the analysis of the degree of difficulty, which has shown that the concepts' capability of being differentiating is highly significant ($p = 0.002$). The six values form five levels. However, the distance between them is not linear. On

the other hand, it could be established that the order between the degrees is the correct one. Further, there is no established fifth degree, which means that the sixth degree is most significantly separated from the fourth degree. This order relation has been empirically determined, a very strong foundation for the given theoretical formulation.

Seen in relation to the discussion about the scaling of the models the following step in effect implies a liberation from the uncertainties associated with assigning a unit of measurement to the concepts. Consequently, the only observation of interest is whether a change can be observed or not. Basically, two observations are needed, namely whether two states or concepts are similar or dissimilar in the transition from one degree of difficulty to the next. The order relation forms a linear, monotonously progressing super-ordinal scale. For its use, see B. Bierschenk (1997b). It is a most peculiar fact that this kind of scale picks up the underlying transformational information, which is non-linear. The next step is to get a conception of how the degrees assemble the characteristics of the concepts in relation to how the classes had comprehended them. For each degree of conceptual difficulty a mean value was calculated for each class. The result is a value that states the relative distance of the class in relation to each degree. Thus comprehension determines whether the concepts of a degree descend (-) or ascend (+) in its direction. Loevinger's index of homogeneity has been used to indicate the quality in the scale. Note that a value above (> .50) is considered to be of high quality (Heidenreich, 1995, p 439). By this measure one can define transition points, that is singular points on the scale where a disparity is apparent. Table 1 shows the super-ordinal scale analysis. The first letter in the combination stands for model (B,P,S), the second for shallow (S) an deep (D).

Table 1.

Super-ordinal Relationship between Classes and Degree of Difficulty

	Class			
Degree	1	2	3	4
1	**BS-**	BS+	BS-	BS-
2	**BD-**	BD-	**BD-**	BD-
3	**SS+**	SS-	**SS+**	SS+
4	**PD+**	PD+	PD+	**PD+**
6	SD-	SD-	SD-	**SD+**

Bold = Points of Transition
Loevinger's index of homogeneity ($H_t = .698$)

The scaling procedure has given five levels, expressed in six degrees which have been named according to their prototypical properties. The first and second degree concepts are related to Behaviourism. Its shallow properties have been named *Sensation* (Behaviourism, Surrealism) and the deep properties *Identity* (Existentialism, Futurism, Provincialism, Psychoanalysis). The third degree concepts are shallow and are related to Structuralism in the sense of *Fate* (Magic Realism, Romanticism, Social Realism). The fourth degree has been named *Mastery*, while it
contains deep Process concepts (Functionalism, Time). The prototypical name of the sixth degree concepts is *Individualism* (Expressionism, Gestalt, Idealism of the Commons, War).

Dimensions in the Comprehension of Ideas

In the depth dimension of the scale there are four structurally bound super-ordinal steps, which denote evolutionary "jumps". The evolution curve is also known as the S-curve

or integral. This will now be used in manifesting the invariants or singularities topologically. Figure 1 is a graphical display of the dimensionality in the comprehension curve. The five degrees are represented as terminal states. The curve can be read from left to right, following the order of transition, whose directionality indicates clear stages of development. Bold letters mark the singularities, which are terms, denoting the final point at which the original concepts of the subject matter, the orientation dimension, meet the conception of the participating students, the intentional dimension.

The vertical dimensions visualise the orientation in the subject matter, while the horizontal dimensions visualise the intention. This means that every term is a   result of a movement that involves orientation in some space and the individual mental prerequisites for accomplishment. In this sense **Primitive** is the result of

Figure 1.

Holotop of Dimensions in the Comprehension of Ideas

Sensation as the space in which the individual searches for *Identity.* When Primitive has been established it orients governed by *Fate* and through this intention the primitive orientation transforms into **Myth.** With *Mastery* there is a turning point in the curve. The functions operate on the myth and transform it into **Symbol**. When this stage has been reached *Individualism* will be the orientation space to finally move to   **Character**.

In the two dimensions of orientation there are two distinct levels of literature. The primitive and mythological is characterised by behavioural and mental frames that seem to be determined by culture. The personal and social texture is in focus. The second is independent

of culture. Both the symbol and character levels concentrate on analysis and synthesis respectively, to focus on individual growth.

The intentional dimensions also visualise two distinct levels. These characterise the range of comprehensive ability that a single individual may obtain. The upper dimension represents the whole conceptual range of the curve. This means that the individual can make moves adequately on all levels. The lower range is

restricted. This indicates an individual who can master myths into symbols but is not able to capture the very essence of the modernism. Thus the upper dimension represents a comprehension curve in relation to the subject of study, whereas the lower one does not.

From Comprehension to Competence

As Figure 1 shows, a comprehension scale has been established. The comprehended ideas have been studied in a literary context. The starting point for the studies, however, were the three basic paradigms displayed on video. In connection with the two exposures to the videos a test form was used consisting of 15 propositional statements on which a participant indicates on a 10 point scale his/her conception of how life would be in the society in question. This measuring instrument has been developed for studying quality of life (B. Bierschenk, 1997a). To have a point of reference the participants judged Sweden as a model society using the same items, although without video support.

For the present study it is of interest to reflect the comprehension of ideas in literature against the comprehension of their function in the projected societies. It could be argued that the established scale would have captured a general culturally bound comprehension of ideas, which could not be separated from the cue structure inherent in the civilisation models. Competence should not be regarded as culturally bound. B. Bierschenk (1992, 1995) has presented an empirically based definition of competence, according to which competence is a measure of civilisation. It is composed of two basic factors, (FI) the possibility to develop Eigenvalue, and (FII) the visibility if social texture. The first factor concerns individuation, the depth of a civilisation, the second selection, the shallowness of a civilisation. Thus, to be able to state whether the degree of comprehension (culture) is indicative of competence (civilisation) we have to know what the students perceive in the models, that is, whether the "literary cliff" may be transformed into the context of civilisation.

A cliff consists of both shallow and deep properties. Both kinds must be perceived in order for an individual to survive (Gibson, 1979). The two factors are effective reflectors of survival competence in civilisation contexts. It follows that when both Eigenvalue and social texture are low in a civilisation no survival competence is required, while high values on both factors mean a clearly perceived depth. Since depth is indicative of the unknown, a high survival competence is required.

An experimental problem encountered by the visual cliff experimenters was the filtering out of those properties of the both sides that might be familiar in the infant's perception of distance. Thus the size of the square pattern of the lowered side was adjusted accordingly. In this way the experimenters were able to distinguish something learnt from genuine survival behaviour. Similarly, the literature scale expresses something learnt. So, to be able to deduce anything about the students' competence in perceiving and judging the four civilisations (B, S, P, and Sweden), the civilisation scale should be filtered through the cultural scale. In preparing for an analysis of covariance the correlation between the dependent variables (FI, FII) and the co-variates (Primitive, Myth, Symbol, Character) was tested and found to be practically zero (I. Bierschenk, 1997).This means that the students' reactions to the civilisations could be corrected in relation to their comprehension of the general properties of the models. Figures 2 and 3 show the perception seen from the Eigenvalue and the social texture perspective.

If no respect is paid to this general knowledge, no difference between the models can be proved. But by the correction, a significant difference appears. In the present study the test – retest design has not been of special interest. Therefore the two video exposures has been considered in combination.

It has been shown (B. Bierschenk, 1997a) that the Behaviour model is highly favoured as fundament of the ideal society. In the present study one can note a dramatic change with respect to the Behaviour model, since the participants' perception of it as a civilisation cliff is extremely negative. There is no possible way of developing Eigenvalue, and the social texture, which should provide for such a development, is practically non-perceivable.
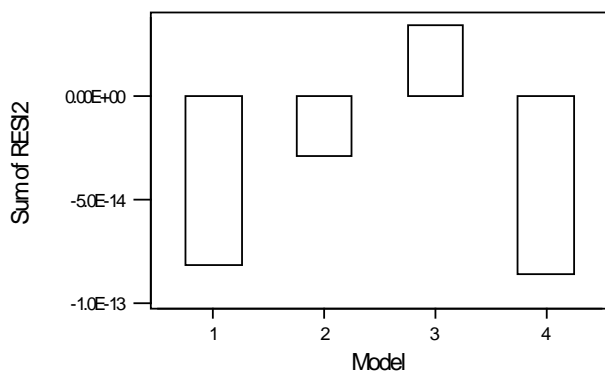
Figure 2.

Perception of Depth in Four Civilisation Models
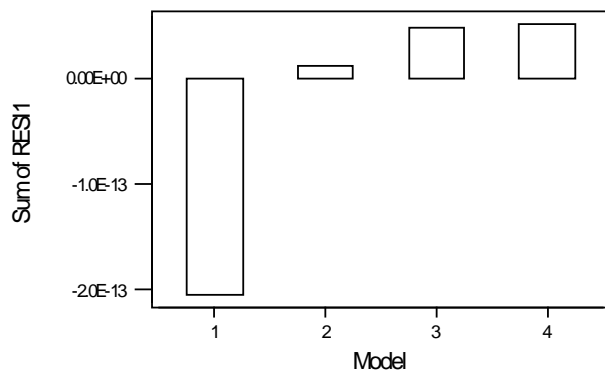
Explanation: Model 1 = Behaviour, 2 = Structure, 3 = Process, 4 = Sweden

Figure 3.

Perception of Shallowness in Four Civilisation Model

The survival competence in terms of individuation and selection needed in a civilisation founded on behaviourism is in fact none.In the civilisation based on Structure the individual development is not entirely rigid but since the social texture is negatively perceived there are no cliff properties of any significance to the individuals. The Process society has been perceived as requiring competence. It is the only civilisation cliff perceived. The native society (Sweden) is perceived as very similar to a civilisation based on economic and technological growth with respect to its ability to develop individuals, but its selection mechanisms are not perceived at all. To these students the native society is thus ambiguous as to competence survival needs.

Discussion

Central for a society to survive as civilisation is to develop structures that supply its members with personal and social instruments for organising life and for contributing to growth. Only in this way can trends and directions be known and prospected. Just as the Visual Cliff apparatus could prove direct perception of depth and thus survival competence in infants, the instrument discovered in the present study could point to direct perception of the survival potential of societies.

The instrument has the capacity to reflect literary cliffs, that is, degrees of cultural depth mediated in language. By this comprehension scale a bridge is established between the perception of ecological depth and depth in society. Both are independent of culture but the societal depth could until now not be measured. When cultural ambiguity is filtered out this transformed depth is directly perceived provided that the perceiver is able to make adequate judgements.

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